

Suyash Gupta

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EDUCATION

University of California Davis
Doctor of Philosophy
GPA: 4.00/4.00

Davis, CA
Jan 2018 – Dec 2021

Purdue University
Master of Science
GPA: 3.83/4.00

West Lafayette, IN
Aug 2015 – Dec 2017

Indian Institute of Technology Madras
Master of Science (Research)
GPA: 8.57/10.00

Chennai, India
Jan 2012 – May 2015

GGSIIP University
Bachelor of Technology
GPA: 82.15/100

New Delhi, India
Aug 2007 – May 2011

WORK EXPERIENCE

- **Postdoctoral Researcher, UC Berkeley** Jan 2022 – present
 - **Advisor: Natacha Crooks**
 - Project – Efficient BFT reconfiguration, communication and storage.
 - * Design of efficient byzantine fault-tolerant consensus protocols using SGX.
- **Lead Architect, ResilientDB** Nov 2019 – present
 - Design and Maintenance of ResilientDB Permissioned Blockchain Fabric (formerly part of MokaBlox startup).
- **Voluntary Instructor, Mentors Without Borders** Nov 2022 – present
 - Teaching Introduction to Databases course to underprivileged students from Kenya, Ghana, and Zimbabwe.
- **Research Assistant, UC Davis** Jan 2018 – Dec 2021
 - **Advisor: Mohammad Sadoghi**
 - Project – Efficient Agreement Protocols
 - * Design of two-phase non-blocking atomic commitment protocol.
 - * Design of topology-aware commitment protocol for geographically distant nodes.
 - Project – Efficient Consensus Protocols and Resilient Architectures
 - * Design of a speculative two-phase byzantine fault-tolerant consensus protocol.
 - * Design of parallel and wait-free byzantine fault-tolerant consensus protocol.
 - * Design of global-scale byzantine fault-tolerant consensus protocol.
 - * Design of secure and fault-tolerant serverless architectures.
- **Research Intern, Novi (Libra/Facebook)** June 2020 – Sep 2020
 - **Advisor: Dahlia Malkhi**
 - Automatic Profiling of Libra Framework
 - * First work to automatically profile a blockchain system.
 - * Integrating Coz profiler [SOSP'15] with Libra framework.
 - * Bug detection during Libra compile time.
 - Analyzing Bottlenecks in Libra Framework
 - * Discovered performance bottlenecks in Libra's implementation of Patricia-Merkle Tries used to store user data.
 - * Found optimal place to parallelize Libra VM and Executor.

* Detected performance bottleneck in Libra VM's prologue.

- **Teaching Assistant, Purdue University** Aug 2017 – Dec 2017
- **Research Assistant, Purdue University** Aug 2015 – Aug 2017
 - **Advisor: Suresh Jagannathan**
 - Project – Probabilistic Test Data Generation
 - * Design of probabilistic test data generators that sample test inputs from various distributions such as Uniform, Binomial and Gaussian.
 - * Extension of probabilistic test data generators implementation to recursive types such as lists and trees.
 - Project – Programming paradigms for distributed databases
 - * Development of a DSL in Ruby on Rails that implements users view of consistency.
 - * Implementation of a parser in Haskell that parses database SQL queries.
- **Intern, IBM India Research lab, New Delhi** Feb 2015 – Apr 2015
 - **Advisor: Mangla Gowri Nanda**
 - Project – Multithreaded Analysis of Java Programs
 - * Study of a novel parallel escape analysis and pointer analysis algorithm.
 - * Testing and analysis of a novel Java decompilation strategy and slicing algorithm.
- **Project Associate, IIT Madras** Jan 2014 – Dec 2014
 - **Advisor: V. Krishna Nandivada**
 - Project – Optimizing parallel programs for multicore systems.
 - * Design of two novel task parallel optimizations for reduction of task creation and task termination operations.
 - * Implementation of the two novel optimizations in X10 compiler.
- **Teaching Assistant, IIT Madras** Jan 2012 — Dec 2013
- **Intern, Bharat Heavy Electrical Limited** Jun 2010 – July 2010

PUBLICATIONS

Books

- **S. Gupta**, J. Hellings and M. Sadoghi, *Fault-tolerant Distributed Transactions on Blockchain*, Morgan & Claypool Synthesis Lectures on Data Management, 2021.

Conferences

- **S. Gupta**, S. Rahnama, S. Pandey, N. Crooks, and M. Sadoghi, *Dissecting BFT Consensus: In Trusted Components we Trust*, In 18th European Conference on Computer Systems (EuroSys), 2023 – **Best Paper Award** and **Awarded all the three Artifact Badges**.
- **S. Gupta**, M. J. Amiri and M. Sadoghi, *Chemistry behind Agreement*, In the Conference on Innovative Data Systems Research (CIDR), 2023.
- **S. Gupta**, S. Rahnama, E. Linsenmayer, F. Nawab, and M. Sadoghi, *Reliable Transactions in Serverless-Edge Architecture*, In 39th IEEE International Conference on Data Engineering (ICDE), 2023.
- S. Rahnama, **S. Gupta**, R. Sogani, D. Krishnan, Mnd . Sadoghi, *RingBFT: Resilient Consensus over Sharded Ring Topology*, In 25th International Conference of Extending Database Technology (EDBT), 2022.
- **S. Gupta**, J. Hellings, S. Rahnama and M. Sadoghi, *Proof-of-Execution: Reaching Consensus through Fault-Tolerant Speculation*, In 24th International Conference of Extending Database Technology (EDBT), 2021.
- **S. Gupta**, J. Hellings and M. Sadoghi, *RCC: Resilient Concurrent Consensus for High-Throughput Secure Transaction Processing*, In 37th IEEE International Conference on Data Engineering (ICDE). 2021.
- **S. Gupta**, S. Rahnama, J. Hellings and M. Sadoghi, *ResilientDB: Global Scale Resilient Blockchain Fabric*, In 46th International Conference on Very Large Databases (VLDB). 2020 — **Artifact Evaluated**.

- **S. Gupta**, S. Rahnama and M. Sadoghi, *Permissioned Blockchain Through the Looking Glass: Architectural and Implementation Lessons Learned*, In 40th IEEE International Conference on Distributed Computing Systems (**ICDCS**), 2020.
- T. Qadah, **S. Gupta** and M. Sadoghi, *Q-Store: Distributed, Multi-partition Transactions via Queue-oriented Execution and Communication*. In 23rd International Conference of Extending Database Technology (**EDBT**), 2020.
- **S. Gupta**, J. Hellings and M. Sadoghi, *Brief Announcement: Revisiting Consensus Protocols through Wait-free Parallelization*, In 33rd International Symposium on Distributed Computing (**DISC**), 2019.
- **S. Gupta** and M. Sadoghi, *EasyCommit: A Non-blocking Two-phase Commit Protocol*, In 21st International Conference of Extending Database Technology (**EDBT**), 2018.
- **S. Gupta**, R. Shrivastava, and V. K. Nandivada, *Optimizing Recursive Task Parallel Programs*, In 31st International Conference on Supercomputing (**ICS**), 2017.

Journals

- **S. Gupta** and M. Sadoghi, *Efficient and non-blocking agreement protocols*, Distributed and Parallel Database (**DAPD**), 2019.
- **S. Gupta** and V. K. Nandivada, *IMSuite: A Benchmark Suite for Simulating Distributed Algorithms*, Journal of Parallel and Distributed Computing (**JPDC**), Elsevier, 2015.

Selected Articles

- J. Chen, **S. Gupta**, S. Rahnama, and M. Sadoghi, *Power-of-Collaboration: A Sustainable Resilient Ledger Built Democratically*. IEEE Data Eng. Bulletin, 2022.
- **S. Gupta**, *Authenticated Concurrent Databases*, In International Workshop on High Performance Transaction Systems (**HPTS**), 2022
- **S. Gupta**, *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics*, PhD Workshop, In 46th International Conference on Very Large Databases (**VLDB**), 2020.
- **S. Gupta**, J. Hellings, T. Qadah, S. Rahnama and M. Sadoghi, *Efficient Transaction Processing in Byzantine Fault Tolerant Environments*, In International Workshop on High Performance Transaction Systems (**HPTS**), 2019 – A Biennial Workshop.
- **S. Gupta** and M. Sadoghi, *Blockchain Transaction Processing*, In Encyclopedia of Big Data Technologies. Springer, Cham, 2018.

Tutorials

- **S. Gupta**, J. Hellings, S. Rahnama and M. Sadoghi, *Building High Throughput Permissioned Blockchain Fabrics: Challenges and Opportunities*, In 46th International Conference on Very Large Databases (**VLDB**), 2020.
- **S. Gupta**, J. Hellings, S. Rahnama and M. Sadoghi, *Blockchain consensus unraveled: Virtues and Limitations*, In 14th ACM International Conference on Distributed and Event-Based Systems (**DEBS**), 2020.
- **S. Gupta**, J. Hellings, S. Rahnama and M. Sadoghi, *An In-Depth Look of BFT Consensus in Blockchain: Challenges and Opportunities*, Middleware Tutorials, 2019.

Demonstrations

- S. Rahnama, **S. Gupta**, T. Qadah, J. Hellings and M. Sadoghi, *Scalable, Resilient and Configurable Permissioned Blockchain Fabric*, In 46th International Conference on Very Large Databases (**VLDB**), 2020.

OTHER RESOURCES

- ResilientDB Fabric, available online at <https://resilientdb.com/>. Source code is available at <https://github.com/resilientdb/resilientdb> and has been forked/starred more than 130 times.

- IMSuite benchmark, available online at <http://www.cse.iitm.ac.in/~krishna/imsuite> and has been downloaded over 5000 times and well-cited.
- DistCheck, a Litmus Testing tool, available online at <https://github.com/gupta-suyash/DistCheck>.

AWARDS & HONORS

- Best Paper Award at EuroSys 2023.
- GGCS Best Graduate Researcher Award 2021.
- GGCS Travel Award 2021 from UC Davis to present paper at EDBT 2022.
- Student Grant from VLDB Endowment for participation in VLDB 2020.
- Student Travel Grant from Middleware 2019.
- GGCS Travel Award 2019 from UC Davis to attend HPTS 2019.
- Scholarship to attend VMW/CAV 2017 at Heidelberg, Germany.
- Travel grant to present paper at ICS 2017 at Chicago, IL.
- Accepted to attend OPLSS 2016 at Eugene, OR.
- Best Use of Data Visualization, Best Mobile App, Most Launchable product sponsored by Dorm Room Fund and PrincetonPy/PICSciE Prize at HackPrinceton 2016.
- First Prize at HackIllinois 2016 (Best Software Hack), and Best use of Microsoft Technology award – 19-21st February 2016.
- First at Purdue University and finalist entry to Windward Code Wars Spring 2016.
- Qualified for Semi-finals at Microsoft Imagine Cup Spring 2016.
- First Prize at Boston Hacks 2015 – 31st Oct – 1st Nov 2015.
- Scholarship to attend POPL/PLMW 2015, at Mumbai, India.
- Outstanding Teaching Assistant Award for courses: CS3310 (Aug 12), CS6848 (Jan 13).
- Scholarship from MHRD, Government of India, for qualifying All India Graduate Aptitude Test in Engineering (GATE) and securing admission at IIT Madras.
- 1st prize, Inter College project competition, 2011, organized by GGSIPU and Delhi Knowledge Development Foundation
- 2nd prize, Technical Paper Presentation, 2011, organized in association of Computer Society of India (CSI) at Jamia Millia Islamia.
- 2nd prize at C/C++ programming at Info Expression 2009.

SERVICES

- **Assitant Editor**
 - Journal of Systems Research (JSys), 2023
- **Reviewer**
 - ICDE 2022, 2023
 - SIGMOD 2023
 - IEEE TPDS 2023
 - IEEE TKDE 2023
 - ACM DEBS 2023
 - Distributed and Parallel Databases (DAPD) 2021, 2022
 - IEEE BigData 2021, 2022
 - FAB 2022
 - ICDCS 2021
 - SIGMOD Record 2019
- **Journal Reviewer**
 - ACM Transactions on Computer Systems (TOCS), 2023
 - IEEE Transactions on Knowledge and Data Engineering (TKDE), 2023
 - IEEE Transactions on Computers (TC), 2023
 - IEEE Transactions on Parallel and Distributed Systems (TPDS), 2022, 2023
 - IEEE Transactions on Dependable and Secure Computing (TDSC), 2022

- Distributed and Parallel Databases (DAPD), 2021, 2022
- Journal of Systems Research (JSys), 2021, 2022
- **External Reviewer**
 - EDBT 2018
 - Middleware 2018.
- **Artifact Evaluation Committee**
 - SOSP 2023
 - OSDI 2023
 - ATC 2023
- **Web Chair**
 - FAB 2021, 2022
 - Middleware 2019
- **Others**
 - **pVLDB Reproducibility:** 2019 – present
 - **Student Reviewer:** EuroSys 2022
 - **Student Volunteer:** VLDB 2019.

MENTORING

- Ethan Xu, B.Sc, UC Berkeley (June 2023 - ongoing)
- Michael Paper, M. Sc, EPFL (Feb 2023 - ongoing)
- Chun Deng, B.Sc, UC Berkeley (Jan 2023 - ongoing)
- Shivang Singh, B.Sc, UC Berkeley (Jan 2022 - July 2022) – Now at Bloomberg
- Shreya Shekhar, B.Sc, UC Berkeley (Jan 2022 - July 2022)
- Aditya Ramkumar, B.Sc, UC Berkeley (Sep 2021 - July 2022) – Now at Google
- Ian Chang, B.Sc, UC Berkeley (Sep 2021 - Dec 2021)
- Kentaro Vadney, B.Sc, UC Berkeley (Sep 2021 - Dec 2021)
- Shubham Pandey, MS, UC Davis (June 2020 - June 2021) – Now at Cisco, Bay Area
- Erik Linsenmayer, B.Sc, UC Davis (June 2020 - June 2021) – Now at DIII-D National Fusion Facility
- Alex Su, B.Sc, UC Davis (June 2020 - Dec 2020)
- Rohan Sogani, MS, UC Davis (Jan 2020 - Dec 2020) – Now at Amazon, Seattle
- Priya Holani, MS, UC Davis (Jan 2020 - Aug 2020) – Now at Amazon, Seattle
- Dhruv Krishnan, MS, UC Davis (Jan 2020 - Aug 2020) – Now at Amazon, Seattle
- Xinyuan Sun, B.Sc, UC Davis (Jan 2020 - Aug 2020)
- Federico Mengozzi, B.Sc, UC Davis (Sep 2018 - June 2019) – Now at Carsbarter, Murcia
- Shreenath Iyer, MS, UC Davis (Sep 2018 - June 2019) – Now at Amazon, Seattle
- Romen Rubero, B.Sc, UC Davis (Sep 2018 - June 2019) – Now at Carsbarter, Murcia
- Patrick J. Liao, B.Sc, UC Davis (Jan 2018 - Dec 2018) – Now at Juniper Technology
- Domenic Cianfichi, MS, UC Davis (Jan 2018 - Aug 2018)

SEMINARS / TALKS

- *Dissecting BFT Consensus: In Trusted Components we Trust* at SkyRetreat'23 on 06/01/2023.
- *Dissecting BFT Consensus: In Trusted Components we Trust* at EuroSys'23 on 05/11/2023.
- *Dissecting BFT Consensus: In Trusted Components we Trust* at SysTEX'23 on 05/08/2023.
- *Reliable Transactions in Serverless-Edge Architecture* at ICDE'23 on 04/06/2023.
- *Chemistry Behind Agreement* at CIDR 2023 on 01/11/2023.
- *Red Light District of DB: BFT Consensus* at Gong Show, CIDR 2023 on 01/10/2023.
- *Dissecting BFT Consensus: In Trusted Components we Trust* at ConsensusDay'22, ACM CCS 2022 on 07/11/2022.
- *In Trusted Components we Trust* at HPTS 2022 on 11/10/2022.

- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at CSE Seminar, IIT Delhi on 07/12/2022.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at CSE Seminar Series, IIIT Delhi on 07/06/2022.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at Distributed Systems Lab, UPenn on 06/13/2022.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at FAB 2022, UC Berkeley on 06/03/2022.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at LSD Seminar, UC Santa Cruz on 04/08/2022.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at Ph.D Exit Seminar, UC Davis on 06/12/2021.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at IIT Madras on 04/30/2021.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at Faisal Nawab's Course, UC Irvine on 04/26/2021.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at SRG Student Seminar, UMich on 03/25/2021.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at RISELab, UC Berkeley on 03/12/2021.
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at Novi Research Seminars on 01/28/2021.
- *Resilient Consensus for High-Throughput Secure Transaction Processing* at Elaine Shi's Research Group, CMU on 12/17/2020
- *RCC: Resilient Concurrent Consensus for High-Throughput Secure Transaction Processing* at Novi Intern Seminars on 08/17/2020.
- *ResilientDB: Global Scale Resilient Blockchain Fabric* at VLDB'20 on 09/01/2020 and 09/03/2020 (recorded video).
- *Building High Throughput Permissioned Blockchain Fabrics: Challenges and Opportunities* at VLDB'20 on 09/01/2020 (recorded video).
- *Resilient and Scalable Architecture for Permissioned Blockchain Fabrics* at PhD Workshop, VLDB'20 on 08/31/2020 (recorded video).
- *Blockchain consensus unraveled: Virtues and Limitations* at DEBS'20 on 07/14/2020.
- *An In-Depth Look of BFT Consensus in Blockchain: Challenges and Opportunities* at REIMAGINE v1.0 on 12/10/2019.
- *ResilientDB: Global Scale Resilient Blockchain Fabric* at FAB'20 on 05/01/2020 (recorded video).
- *Permissioned Blockchain Through the Looking Glass: Architectural and Implementation Lessons Learned* at FAB'20 on 05/01/2020 (recorded video).
- *An In-Depth Look of BFT Consensus in Blockchain: Challenges and Opportunities* at Middleware on 12/10/2019.
- *EasyCommit: A non-blocking two-phase commit protocol* at EDBT'18 on 03/29/2018.
- *Optimizing recursive task parallel programs* at ICS'17 on 06/14/2017.
- *IMSuite: A benchmark suite for simulating distributed algorithms* at Purdue University on 09/15/2016.
- *Analyzing Recursive Task Parallel Programs* at Indian Institute of Technology Madras on 10/16/2014.